REMARKS

The Office Action dated November 20, 2002 has been read and carefully considered and the present amendment submitted to make certain clarification to the claim language.

In the aforementioned Office Action, an objection was made to the language and format of the Abstract as utilizing legal phraseology and, accordingly, a new Abstract is submitted herewith to replace the prior Abstract and which has eliminated that legal language.

Claims 1-8 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which Applicant regards as the invention and, specifically, the rejection was based upon the lack of an antecedent basis for the terms "the true value" and "the pre-established nominal value". As such, the new claims 9-16 entered herewith have been redrafted to correct the antecedent basis and it is therefore submitted that the Section 112 rejection has been overcome.

Claims 1-8 were also rejected under 35 U.S.C. 103(a) as being unpatentable over Pajerski *et al*, U.S. Patent 4,697,661 in view of Hecker *et al*, U.S. Patent 3,986,090. Accordingly, claims 1-8 have been cancelled without prejudice and new claims 9-16 submitted herewith. The basis for the subject matter of the new claims is well founded in the specification where new claim 9 is supported in the prior claim 1 and the reference to the use of motor current in the feedback circuit is disclosed on page 7, lines 23-24.: "A feedback circuit 5 which measures the motor current". The new claims 10-14 are supported by the prior claims 3-5; new claim 15 is supported in prior claim 2 and new claim 16 is supported in prior claim 8.

Turning now to the obviousness rejection under 35 USC §103 of the Office Action, the following considerations are given. The features disclosed in Pajerski *et al* are included in the preamble of new claim 9. As to the Hecker *et al* reference that was combined with Pajerski *et al*, the Hecker *et al* reference discloses a motor drive for displacing a part of an X-ray apparatus, however, there are marked differences between the present invention and the motor drive system of Hecker *et al*.

Firstly, Hecker *et al* makes use of an acceleration or motor speed control. Note the following references to the Hecker *et al* reference:

col. 2:

line 39 "acceleration control or a motor speed control";

lines 43-58 "The force exerted... to the motor speed n.";

col. 3:

lines 4-39 "In speed control... motor speed and hence constant acceleration are obtained";

lines 48-50 "a tachogenerator 7 is coupled... to the motor speed n";

col. 4:

lines 15-16 "A further signal... to the speed variations *dn/dt*";

lines 27-36 "A superposition signal... control amplifier 17";

lines 46-55 "Hence... the motor output force";

lines 62-64 "the control circuit... is a true motor-speed control circuit";

col. 6:

lines 26-27 "controlling the speed... of the motor";

lines 35-36 "determined by the motor speed variations *dn/dt*";

lines 38-40 "desired value for an acceleration control or for a motor speed control";

lines 52-53 "a signal proportional to the measured motor speed";

lines 61-63 "a signal proportional to the measured speed (*n*)... input of the control circuit";

col. 7:

lines 20-21 "determined by variations of the motor speed, *dn/dt*").

Thus, the invention described in Hecker *et al* measures a **mechanical magnitude (*n*)**, whereas the **present invention measures an electric magnitude (current)**. This implies that in the Hecker *et al* drive system, it is necessary to employ a transducer to convert the motor speed into an electric signal, wherein that magnitude conversion is unnecessary in the present invention.

not excluded.

The invention in Hecker *et al* further derives (16) the motor speed (*n*) to obtain motor acceleration (*dn/dt*).

Given that the device in Hecker *et al* must control the vertical ascending/descending movement of the image forming section (1), it becomes apparent that the drive system of Hecker *et al*

it is required to control the motor (6) acceleration to consequently control the positioning of the image forming section (1):

$$\Sigma T = I \alpha$$

where:

T: torque

I: moment of inertia

α: angular acceleration

Thus, in Hecker *et al*, when in operation, the torque generated by the manual force acting on the transducer (11), will vary depending on said force (value, upward/downward direction), which will imply that the angular acceleration must be accordingly altered.

When in idle status (no force acting on the transducer (11) $\Rightarrow$ static positioning of the image-forming section (1) $\Rightarrow$ static motor (6)), the previous equation is $\Sigma T = 0$ (torque equilibrium). However, the motor (6) of Hecker *et al* must continue to be generating a torque to equal the torque produced by the weight of the image-forming section (1) to guarantee a static positioning of the image-forming section (1).

In this idle status there is no electric signal produced by the transducer (11) (and therefore no signal at the output of amplifier (12)) nor any motor speed signal (*n*) (and therefore no signals at the outputs of elements (15) and (18)). Thus, the output signal of element (17) is generated only by the variable resistor (30), which corresponds to the weight of section (1). This confirms that it is essential to have a permanent control signal to keep the image-forming section (1) in a stable position to prevent it from ascending or descending (by its weight) when no force is acting on the transducer (11).

- irrelevant, not excluded by claims

On the other hand, the present invention describes a system for controlling electric motors used in the propulsion of a transport trolley. Apart from the above-mentioned difference in magnitudes used in the control of the motor, there are also differences in (1) the movement direction as well as in (2) the movement length of the element to be displaced:

- irrelevant, claims do not exclude

Taking first the movement length, Hecker *et al* must control the vertical movement and the position of the image-forming section (1) between two well-defined end positions. Thus, the movement is limited within a fixed distance determined by a top position and a bottom position and because the movement takes place between said limits, the location of the image-forming section (1) must also be controlled.

On the contrary, the system in the present invention does **not** have a **predetermined range** in which the element to be displaced can be moved. The trolley of the present invention will be propelled as long as a force is acting to order that movement.

The "movement length" difference is therefore based on the different objects of the two inventions: Hecker *et al* is a motor drive to **locate an element in a specific given position**, whereas the **present invention** refers to a **means of transport with "unlimited mileage"**.

Next, as to the motion direction, the system in the present invention is installed on a transport trolley which will run along a substantially **horizontal surface.** Thus, the weight of the trolley is not an essential factor during operation of the system because the force of the **weight of the trolley** is **perpendicular to the movement direction** and so the **work of this force** is therefore **nil:** consequently, **no energy** is required **to compensate for moving the point of application of said force**.

- taking account of weight is irrelevant → claims do not exclude w/ consideration

Again, to the contrary, however, Hecker *et al* shows that the **movement** and the **weight of the image-forming section (1)** share the **same direction**, which implies that part of the energy to move the image-forming section (1) must be employed to **counterbalance said weight**.

Accordingly, this relation between the **weight-force/displacement directions** clearly shows that the **weight of the propelled element** does **not** play **any part** in the **present invention**, while the **weight of the image-forming section (1) does** on the invention disclosed in Hecker *et al.*

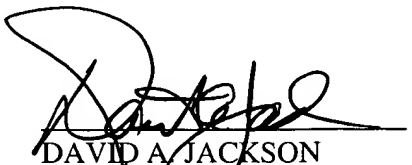
Thus, in **idle status**, the **weight of the trolley** is **not taken into account** by the system of the **present invention**, whilst it **is** in **Hecker** *et al.*

apart from not being captured by claim

↑ differences noted above result from diff. intended uses for motor → irrelevant (intended use) - in a motor control/amplifier circuit, using a feedback circuit w/ comparator means would [illegible] [illegible] regardless of [illegible] motor used.

As such it is submitted that the drive system of Hecker *et al* and the present invention are distinctly different systems and the drive system of Hecker *et al* cannot be used to modify the Pajerski *et al* reference to render the present claims as unpatentable. As now claimed, the distinctions are recited in the language of new claim 9 which is submitted to be patentable over the Pajerski *et al* reference taken in view of Hecker *et al*, along with the dependent claims 10-16 and an allowance of the present application is respectfully solicited. .

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

The Section entitled ABSTRACT on page 14 has been amended as follows:

ABSTRACT

SYSTEM FOR THE CONTROLLED OPERATION OF A DEVICE PROPELLED BY ELECTRIC MOTOR

A system is described for the controlled propulsion of a transporting device [comprising] including at least two drive wheels propelled by electromotive [means] units, in which system at least two drive wheels are each propelled by independent electric motors; each electric motor receives electric power through an independent power amplifier which amplifies electric [electrical] signals produced by sensor [means] devices; the sensor [means] devices detect a mechanical force applied on a push and pull element, and convert [said] the mechanical force into electric [electrical] signals which indicate the degree and the direction of the mechanical force applied on [said] the push and pull element; and the amplifier amplifies the signal in accordance with a factor which is a function of the weight that the trolley has to move and it feeds the electric motor so it can power the drive motor in accordance with a torque corresponding to the movement ordered through the sensor [means] devices.